



Universitas Brawijaya
Faculty of Mathematics and Natural Sciences
Department of Statistics / Bachelor Statistics Study Programme

Module Handbook

Module Name:	Introduction to Sets and Logics (MAS61112)	
Module Level:	Bachelor	
Abbreviation, if applicable:	-	
Sub-heading, if applicable:	-	
Courses included in the module, if applicable:	-	
Semester/term:	1st/ First Year	
Module Coordinator(s):	Luthfatul Amaliana, S.Si., M.Si	
	Dr. Adji Achmad Rinaldo Fernandes, S.Si., M.Sc.	
	Dr. Eni Sumarminingsih, S.Si., M.M.	
	Luthfatul Amaliana, S.Si., M.Si	
Language:	Indonesian	
Classification within the curriculum:	Compulsory course	
Teaching format / class per week during semester:	2 × 50 minutes	
Workload:	1.67 hours lectures, 2 hours structural activities, 2 hours individual studies, 16 weeks per semester, and total 90.67 hours per semester 3 ECTS	
Credit Points:	2	
Requirements:	-	
Learning goals / competencies:	General Competence (Knowledge):	
	ILO1	The students are able to master basic scientific concepts and statistical analysis methods applied on computing, social science, humanities, economics, industry and life science.
	ILO2	The students are able to arrange and/or choose an efficient data collection/ data generated design that applies in surveys, experiments or simulations.
	ILO3	The students are able to manage, analyze, and complete the real case using statistical method on computing, social humanities, economics, industry and life science that helped by software, then present and communicate the results.
	ILO4	The students are able to master at least two statistical softwares, including based on open source.

	ILO5	The students are able to apply logical, critical, systematic, and innovative thinking independently when applied to science and technology that contain humanities values, based on scientific principles, procedures and ethics with excellent and measurable results.
	ILO6	The students are able to take appropriate decisions to solve the problems expertly, based on the information and data analysis.
	ILO7	The students are able to improve and develop a job networks, then supervise and evaluate the team's performance they lead.
	ILO8	The students are able to apply and internalize the spirit of independence, struggle, entrepreneurship, based on values, norms, and academic ethics of Pancasila in all aspects of life.
	Specific Competence:	
	M1	Students are able to understand logic, logic rules, how to construct and prove statements (ILO1, ILO5, ILO6)
	M2	Students are able to understand the concept of the set, proving the simple properties of the set (ILO1, ILO5, ILO6)
	M3	Students are able to convey an understanding of logic, logic rules, how to build and prove statements both written and oral, in the form of individual or group assignments (ILO1, ILO5, ILO7, ILO8)
	M4	Students are able to convey an understanding of the concept of the set, proving the simple characteristics of the set both written and oral, in the form of individual or group assignments (ILO1, ILO5, ILO7, ILO8)
	M5	Students are able to understand and explain the application of logic and sets in the field of statistics and computers both written and oral, in the form of individual or group assignments (ILO1, ILO5, ILO7, ILO8)
Contents:	1	Statements, propositions, operators (connectors) propositions, propositional logic sentences, compound sentences, truth tables.
	2	Contraposition and circle of sentences, the definition of constants and variables, tautology, contradictions and contingencies, logic of equivalence.
	3	Quantor, universal and existential, limited quantification, inference rules.
	4	The universe of discussion, the set and its operations, power sets, the proof of induction.

	5	Relations, properties of binary relations, representation of relations with matrix and with directed lines, inverse relations, composition of relations.
	6	Functions, domains and ranges, injective functions, subjective and bijective, functions composition.
	7	Examples of the application of logic and sets in statistics and computers.
Soft skill attribute:	Responsible, independently, and discipline	
Study/exam achievement:	<p>Final score (NA) is calculated as follow: 5% Attitude, 20% Quizzes, 30% Midterm Exam, 30% Final Exam, 10% Assignments, 5% Post Test</p> <p>Final index is defined as follow:</p> <p>A : > 80 - 100</p> <p>B+ : > 75 - 80</p> <p>B : > 69 - 75</p> <p>C+ : > 60 - 69</p> <p>C : > 55 - 60</p> <p>D+ : > 50 - 55</p> <p>D : > 44 - 50</p> <p>E : 0 - 44</p>	
Forms of media:	Laptop, LCD projector,	
Learning methods:	Lecture, assessments, and discussion	
Literature:	Main:	
	1. Marsudi. 2010. Logika dan Teori Himpunan. UB Press, Malang.	
	2. Rosen K. H. 2012. Discrete mathematics and its applications 7th Ed. McGraw-Hill. Inc..	
	Support:	
Notes:		